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ABSTRACT

The use of microcomputers to help the learning disabled increase their arithmetic skills is examined. The microcomputer should be used to aid the learning disabled student to practice the concepts taught by the teacher. Computer-aided instruction such as drill and practice may help the learning disabled student because it gives immediate feedback and repeats questions and problems without any pressure. The microcomputer provides visual, auditory and kinesthetic stimuli to help the learning disabled student learn best. The Special Education teacher can also benefit from the microcomputer by learning to do programming. The microcomputer can be used as another tool to help deliver the appropriate educational needs of the learning disabled, but it should not be the only tool. (Author/PK)

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Using Microcomputers to Help Learning Disabled
Student with Arithmetic Difficulties

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Running head: USING MICROCOMPUTERS TO HELP LEARNING DISABLED

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Abstract

The use of microcomputers to help the learning disabled increase their arithmetic skills is examined. The microcomputer should be used to aid the learning disabled student to practice the concepts thought by the teacher. Computer aided instruction such as drill and practice can help the learning disabled student because it gives immediate feedback, repeats questions and problems without any pressure.

The microcomputer provides visual, auditory and kinesthetic stimuli to help the learning disabled student learn best. The Special Ed teacher can also benefit from the microcomputer by learning to do programming.

Microcomputer should be used as another tool to help deliver the appropriate educational needs of the learning disabled. It should not be the only tool.

Using Microcomputers To Help Learning Disabled Students
With Arithmetic Difficulties

The problems that learning disabled students have in arithmetic has not received the attention that it deserves from researchers. Learning disabilities in arithmetic can have very negative effects in latter life if proper assistance is not provided (Gearheart, 1981, p. 237).

The purpose of this article is to describe 4 advantages that using microcomputers has for the delivery of arithmetic instruction to learning disabled students. For each advantage a rationale and an example is provided to illustrate importance and applicability for teachers providing arithmetic instruction to learning disabled students.

Advantage #1: Provide immediate feedback and reinforcement.

Rationale. Children with learning disabilities are sometimes unsure of themselves. Computers can provide continuous and positive feedback and praise, thus giving students a higher sense of self-esteem. Raising a students' confidence level can be a tremendous contribution to the ability to learn (Shiffman, Tobin & Buchanan, 1982, pp. 557-559).

Example: An example on how the microcomputer can provide immediate feedback and reinforcement can be seen below, (see figure 1):

Figure 1

THE MATH TUTOR ADDITION PRACTICE					
Name?	GOOD MORNING. Today you and I are going to do a little addition. I'll make up the problems and you can give the answers. Here we go.				
+ 123	+ 209	+ 792	+ 357	+ 892	
+ 507	+ 357	+ 116	+ 431	+ 101	
---	---	---	---	---	
=? <u>630</u>	=? <u>566</u>	+? <u>808</u>	=? <u>788</u>	=? <u>993</u>	
		? <u>908</u>			
NOT BAD, - only 1 wrong answer in 5 problems! Let's practice the CARRY a little more. Okay? (Y or N) <u>Y</u>					
+ 147	+ 678	+ 225	+ 216	+ 131	
+ 334	+ 132	+ 276	+ 492	+ 799	
---	---	---	---	---	
=? <u>481</u>	=? <u>810</u>	=? <u>501</u>	=? <u>708</u>	=? <u>930</u>	
VERY GOOD! You're doing so well, let's try some bigger numbers. Okay? -					

The microcomputer provides immediate feedback to the student after each answer is given. The student knows immediately whether an answer is right or wrong. The program identifies the difficulty

with CARRY. It automatically presents new problems to the student requiring this operation. Verbal encouragement is given throughout the lesson to increase the student's self-esteem (Budoff, Thormann & Gras, 1984, pp. 38-39).

Advantage #2: Provide excellent motivation for learning disabled children.

Rationale. Students with learning difficulties often work more slowly than others. The computer does not mind; it waits patiently while the student works out the answer. The impersonal element of the computer provides non-threatening instruction (Hofmann, 1983, pp. 174-177). The students taught on microcomputers develop very positive attitudes towards the computer (Tashner, 1984, pp. 5-6). The computer can give the student its undivided attention and does not have to be concerned about other students' in the room (Shiffman, Tobin & Buchanan, 1982, p. 557). Therefore he (or she) will not be embarrassed.

Example. The computer keeps records of the student's accomplishments and failures. The computer will continue to give reinforcements to the student whenever necessary. The student can recall his accomplishments whenever he wants to boost his self-esteem. He will no longer see himself as always failing. He can move on to other tasks without fear of failing.

Advantage #3: Graphics and game playing situations make basic drill and practice more interesting.

Rationale. The learning disabled student finds games challenging and non-threatening. Games are good motivators. The student works harder and can produce more if a computer game is provided as a reward for completed classroom work. Games also teach and improve specific skills, including fine motor control and improved eye-hand coordination, via the need for quick, focused response using the joystick or a game paddle (Budoff, Thormann & Gras, 1984, p. 84). The graphics feature is valuable for work with learning disabled students because it provides an additional and very appealing means of communication (Budoff, Thormann & Gras, 1984, p. 64).

Example. An example from Kolich, 1985, can be seen below: Using the computer language LOGO students develop logical thinking and problem-solving skills by manipulating a turtle or triangular-shaped cursor around the computer screen, creating geometric shapes and designs. The learning disabled student was able to demonstrate cognitive and affective gains as a result of working in LOGO.

Advantage #4: Provide visual, auditory and motoric modes of support for learning disabled students.

Rationale. The learning disabled often need a combination of visual, auditory, and kinesthetic stimuli to learn best (Shiffman, Tobin & Buchanan, 1982, pp. 557-559).

Example. The motor support is realized in the use of the printer which provides the student with attractive hard copy. The monitor screen and printer provide the needed visual patterns (e.g. use of the cursor) for daily exercise at visual tracking without any sense of practice (Rosegrant, 1985, p. 114). Students are able to use these modalities separately or in any combination as needed to support their learning efforts. It would be difficult to achieve a similar range of choices with other educational devices or methods (Rosegrant, 1985, p. 115).

Conclusion

The purpose of this article was to describe 4 advantages that microcomputers have in supplementing arithmetic instruction for learning disabled students. Although the author has described specific instances that a microcomputer can be used for learning disabled students receiving arithmetic instruction, she also feels that uses of the microcomputer for the teaching of reading and writing also offer an excellent tool for teachers to utilize.

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